Minden District Fisheries Management Plan

1986-2000

Ontario

Ministry of Natural Resources

Vincent G. Kerrio
Minister

Minden District Fisheries Management Plan

1986-2000

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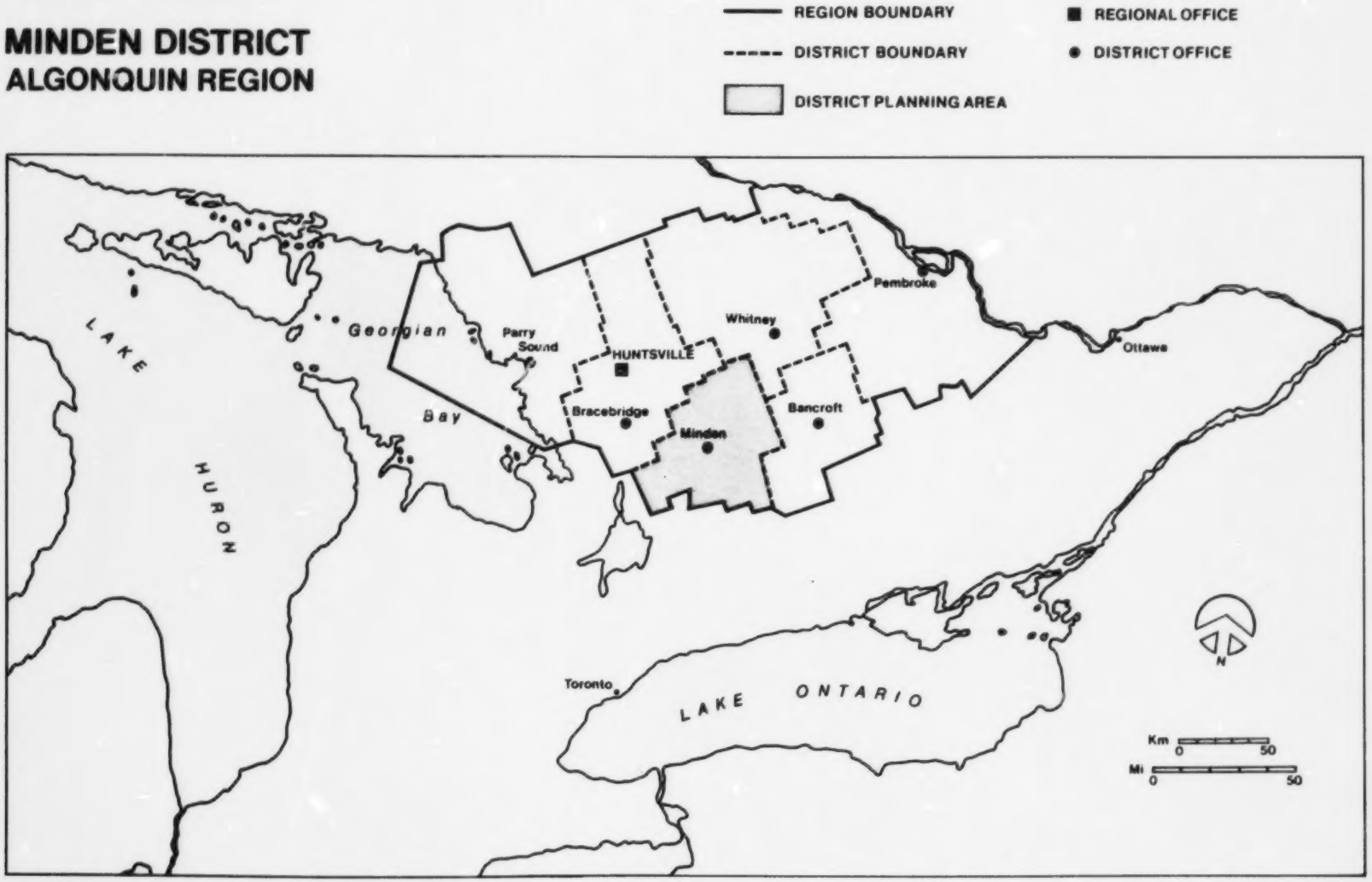
FIGURE 1: REGIONAL SETTING

MINDEN DISTRICT
ALGONQUIN REGION



This document consists of fisheries resource information and management strategies which collectively form the District Fisheries Management Plan. The purpose of the Plan is to describe both the direction of fisheries management efforts to the year 2000, and the specific actions that will be undertaken in the short-term (5 years) to achieve the Plan's objectives.

Operating within the context of the District Land Use Guidelines (D.L.U.G.), the Plan provides a measure against which Minden District's fisheries program can be evaluated by both resource managers and the public.

J.K. BARKER District Manager
Minden District

A.J. STEWART, Regional Director
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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this Management Plan is to identify both long-term fisheries management direction (year 2000) and specific short-term (5 year) fisheries management programs to be carried out within Minden District.

This Fisheries Management Plan is written for the 4555 square km. managed by the Minden District Office of the Ontario Ministry of Natural Resources. An additional 190 square km of the Minden District is administered by the Leslie M. Frost Natural Resources Centre for which a separate Fisheries Management Plan is being prepared.

The northeast corner of Eyre Township (67 square km.), known as the McRae addition, was purchased by the Crown in 1967 for addition to Algonquin Park and is currently being managed by Minden District. Until the ultimate status of this area is determined, fisheries programs will be consistent with management throughout the District. However, the fisheries of the McRae addition will not be included within the context of this Plan, but rather within the Algonquin Park District Fisheries Plan.

1.2 PLANNING PROCESS, EXISTING POLICY AND TECHNICAL DIRECTION

This Fisheries Management Plan has been prepared within the framework of the Ministry's land use and resource management planning system (M.N.R., 1986). This system coordinates the Ministry's land and water programs at a broad level, outlining Ministry of Natural Resources intentions to provide optimum use of the resources with a minimum of conflict to achieve established objectives. The District Land Use Guidelines follow this direction and in turn provide targets and direction for individual resource management plans (M.N.R., 1983).

The planning process provided for public input. Interest groups and the general public were provided the opportunity to comment on the Background Information and Management Options report in the fall of 1985, and the resulting Draft Minden District Fisheries Management Plan in the summer of 1986. This public input was used to develop the preferred management strategies and tactics as presented in this final Plan. Public response, summarized in Appendix I, indicated agreement with the problems and issues that were identified and strong support for the strategies and tactics that were developed.

These strategies and tactics indicate how the Ministry intends to manage the fisheries of the Minden District. All strategies have been prepared within the context of Strategic Planning for Ontario Fisheries (S.P.O.F. 1980) principles and in full recognition of the Ministry's commitment to Integrated Resource Management.

A fisheries management Implementation Schedule is also included, describing specifically, for the first 5 year period, the tactics (i.e. management actions) required to meet fisheries management objectives. Annual fisheries work plans will be developed in accordance with the fisheries Implementation Schedule.

1.3 SUPPORTING DOCUMENTS

A detailed background report and analysis which form the basis for the management direction described in this Plan have been prepared. This supporting document is available for review at the Minden District office and includes information regarding:

- The Resource
- Resource Use and Projections
- Target Testing
- Problems and Issues
- Present Management Practices
- Identification and Evaluation of Optional Management Strategies and Tactics.

The Background Information and Options Summary report, and the Draft Fisheries Management Plan presented at the first and second open houses are available to the public while supplies last. In addition, a summary of the first and second open house presentations, public participation and response are available for review at the District office.

2.0 DISTRICT FISHERIES PERSPECTIVE

2.1 SETTING

The Minden District is one of six administrative Districts within the Algonquin Region (Figure 1). Minden District (Figure 2) is located in the transition zone between the Southern Lowlands and the Canadian Shield.

The Shield portion of the District is typical of mid-central Ontario with numerous lakes, rivers, streams and beaver ponds. The larger lakes, 100 to 1400 ha. in size, are typical oligotrophic lake trout-bass waters. The smaller lakes are predominantly bass and/or stocked brook or rainbow trout waters.

The limestone plains of the south-western one third of the District contain fewer lakes than the Shield and in general, lakes in this area are large and shallow. These lakes are mesotrophic to eutrophic and support warmwater fisheries for bass, muskellunge, pike (northern), walleye (yellow pickerel), and panfish.

Extensive historic fish stocking of warmwater species from the 1920's to the present, particularily smallmouth and largemouth bass, muskellunge and walleye, have resulted in the establishment of these species throughout the District. Many of these warmwater species have also been introduced into oligotrophic (trout) waters on the Shield.

Stocking of lake trout, brook trout, and rainbow trout since the 1920's has also been extensive within the District. Approximately 90% of all lake trout lakes in the District have been stocked in the past. Almost all brook and rainbow trout lakes are maintained by stocking (artificial fisheries).

The proximity of the District to highly populated Southern Ontario, and the abundance of hundreds of high quality lakes have resulted in Minden District becoming a major summer and winter recreation area. Private cottage and commercial tourist resort development is extensive throughout the District. As a result, tourism and cottaging are considered the most important aspects of the District's economy.

2.2 THE RESOURCE

The following is a basic summary of the Fisheries Resource:

- Minden District Area (excluding Frost Centre) - 4555 km.^{2}
- Crown Land - 29%
- Patent (Private) Land - 71%
- Number of Lakes - 1322
- Total Surface Area of Lakes - 35,863 ha.
- Total potential fish production from all District Lakes - 157,334 kg./yr.
- Allowable Harvest of lake trout, brook trout, rainbow trout, splake, bass, muskellunge, pike, walleye and whitefish/herring -120,640 kg./yr.
- 100% of allowable harvest is available to the sport fisheries, since there is no commercial food fishery within the Minden District
- Length of Streams and Rivers - 2415 km.

A summary of resource production by fish species as well as resource use, projected use, current capabilities, resource potential and species contributions are presented in Table 1.

Figure 2: MINDEN DISTRICT

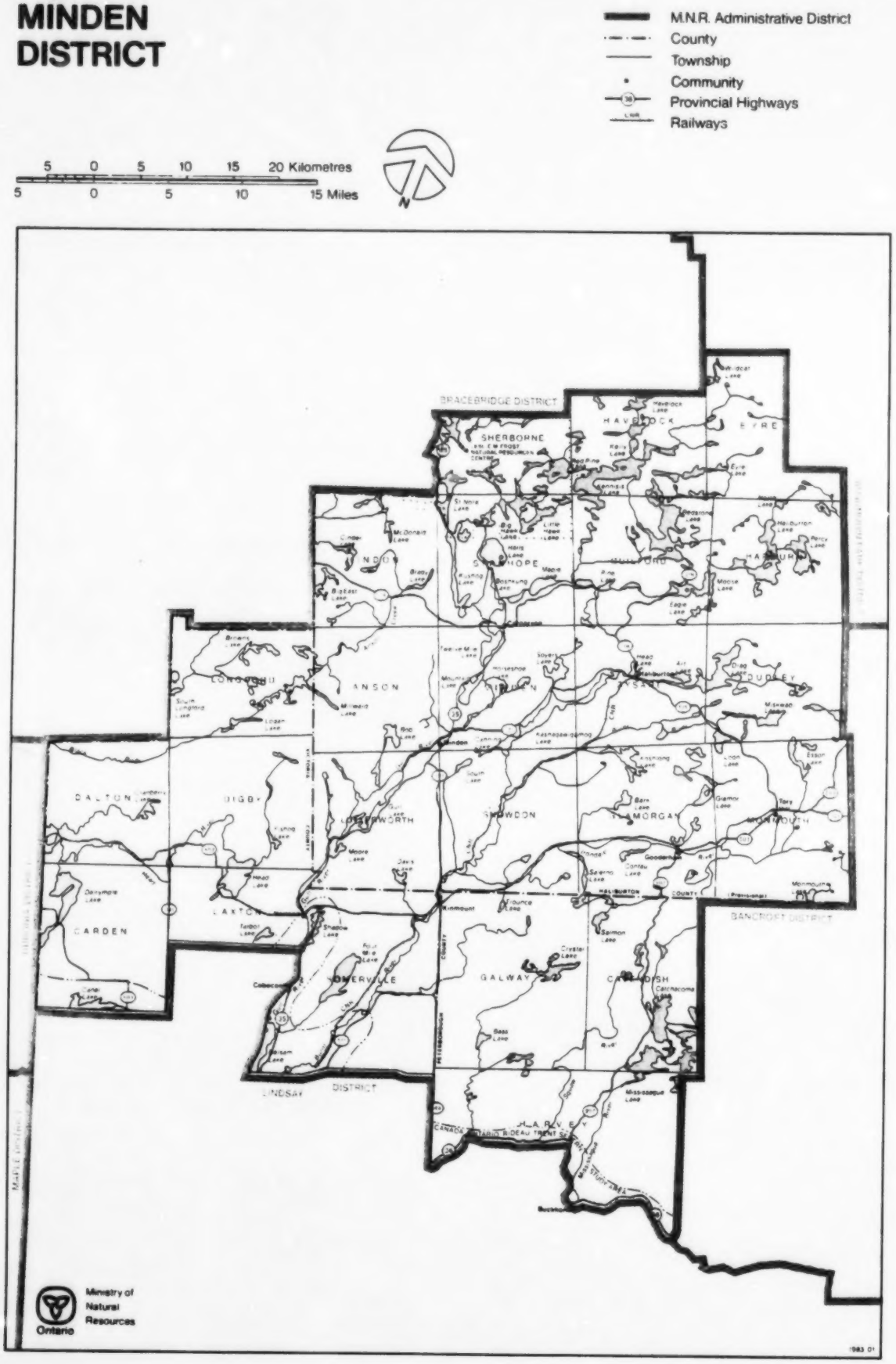


TABLE 1: FISHERIES RESOURCE AND DEVELOPMENT OF TARGET WITH SPECIES CONTRIBUTIONS

SPECIES	CURRENT USE		DISTRICT LAND USE GUIDELINES TARGETS*		PROJECTED USE		CURRENT RESOURCE CAPABILITY		RESOURCE POTENTIAL		SPECIES CONTRIBUTION	
	Opp.	Kg.	Opp.	Kg.	Opp.**	Kg.	Opp.**	Kg.	Opp.	Kg.	Opp.	Kg.
Lake Trout	140,000	35,000	(98,000)	(8,400)	161,000	32,200	50,500	10,100	-	-	50,500	10,100
Brook Trout, Rainbow Trout & Splake	102,000	25,100	(98,000)	(8,400)	117,000	23,400	117,000	23,400	-	-	117,000	23,400
Whitefish & Herring	1,500	300	-	-	1,700	300	39,750	7,950	-	-	39,750	7,950
Smallmouth & Largemouth bass	107,000	43,000			123,000	61,500	116,750	58,370	-	-	123,000	61,500
Muskellunge & Pike	1,000	1,500	(1,204,000)	(103,200)	1,200	600	22,880	11,440	-	-	22,880	11,440
Walleye	7,000	2,800			8,100	4,200	18,760	9,380	-	-	18,760	9,380
Non-Traditional Species	-	-	-	-	-	-	-	-	-	-	40,110	-
TOTAL	358,500	107,700	(1,400,000)	(120,000)	412,000	122,200	365,640	120,640	-	157,334	412,000 REVISED SPORT FISH TARGET	123,770***

* Quality standard of catch for all species, .086 kg/opportunity; bracketed numbers as per DLUG discussion.
** Provincial quality standards of 0.2 kg/opportunity coldwater species, 0.5 kg/opportunity warmwater species.
*** The revised sportfish target slightly exceeds current resource capability. Through management of those species with potential for expansion (e.g. bass) resource capability can be increased.

NOTE:
Lake Trout - assumes allowable harvest of stocked and naturally reproducing fisheries to be the same, most probably an underestimate.
Brook Trout, Rainbow Trout & Splake - primarily stocked fisheries, therefore, allowable harvest equals projected harvest.
Muskellunge - allowable harvest calculated using northern pike criterion, however, this is very likely an overestimate.
Non-Traditional Species - includes; perch, ling, suckers, carp, smelt, pumpkinseed, rockbass, etc.

Figure 4 (back cover pocket) is a map of the District's fisheries resource base.

Appendix II contains lists of the District's lake trout, brook trout, rainbow trout, splake, walleye, muskellunge, and pike lakes.

2.3 RESOURCE USE

Sport Fishing

Minden District currently provides an estimated 358,500 sport fish angling opportunities for lake trout, brook trout, rainbow trout, splake, bass, muskellunge, walleye, pike and whitefish/herring annually, (one angling opportunity is the equivalent of four man-hours fishing). This estimate utilizes the 1980 Lakeshore Capacity Study, Fisheries Assessment Unit data and District creel census information.

Other non-traditional sport fish species such as perch, ling, suckers, smelt, panfish, etc. provide many thousands of additional angling opportunities annually; however, specific estimates for these species are unavailable. In addition, stream and river fisheries provide added angling opportunities (11 streams and rivers have been stocked with brook or rainbow trout), however, again no specific estimates are available. A summary of current resource use is provided in Table 1.

Lake trout are the most sought after sport fish species in Minden District, followed by bass (smallmouth and largemouth), brook trout/rainbow trout/splake, walleye, whitefish/herring, and muskellunge/pike.

A majority of angler effort for coldwater (trout) species occurs during winter and spring when local residents and day-trip anglers predominate. Generally, the summer fisheries for all species has greater participation by cottage owners, day trippers from southern Ontario, and guests of commercial establishments. Lake trout harvest is split equally between "ice" and "open-water" fishing. The 1980 Provincial Angler Survey estimates a small proportion (only 6%) of anglers in Minden District reside outside the Province of Ontario.

Although there are no accurate estimates, a relatively small proportion of anglers utilize the services of commercial outfitters.

Commercial Fish

There is at present, no commercial food-fish netting industry within Minden District. To date there are two commercial fishing preserve operators and two commercial hatcheries licensed to propogate and sell trout and bass.

Bait Fish

There are currently 29 licensed bait fish harvesters and 43 establishments licensed to sell bait fish within Minden District. A majority of the District is currently under license. Annual returns indicate fluctuations in harvest of between 20,000 and 50,000 dozen with estimated gross values of 20,000 to 40,000 dollars.

2.4 PROJECTED RESOURCE USE - YEAR 2000

Sport Fishing

Angler demand is expected to increase by 15% by the year 2000 to approximately 412,000 angler

opportunities, with angler preference and quality of experience remaining constant (Table 1).

Anticipated harvest is based on projected demand and provincial angler success standards of 0.2 kg fish per angler opportunity for coldwater species and 0.5 kg fish per angler opportunity for warmwater species. These quality standards are similar to present success rates in Minden District.

Bait Fish

It is reasonable to expect that as the demand for sport fishing opportunities increases so will the demand for bait fish. Although no accurate inventory data exists, the bait fish resource in the Minden District is thought to have the potential to support an expanded industry.

2.5 PROBLEMS AND ISSUES

If the demand for sport fish is to be met, there are several fisheries management concerns that must be dealt with.

The primary concerns are a need for additional inventory data, habitat loss, the introduction of competitor species, water level fluctuations, acid precipitation, the loss of lake whitefish, the over-harvest of lake trout, limited access to the resource, a dependance upon stocked coldwater fisheries, a large number of District lakes not presently supporting sport fish, a projected high demand for bass, resource user conflicts and the need for more effective public education.

A more detailed description of these issues, quantifying the degree of the problem within Minden District follows:

(i) Need for Additional Inventory Data

A large number of lakes remain unsurveyed, no streams have been surveyed to date, the location of many lake trout spawning beds is unknown, the extent of naturally reproducing brook trout is unknown, many critical habitats such as nursery and spawning areas remain undocumented, allowable harvest of bait fish is unknown, and allowable harvest estimates for stocked lake trout need to be refined.

(ii) Habitat Loss

Habitat loss includes both degradation of habitat (spawning beds, nursery areas, etc.) and the deterioration of water quality (e.g. oxygen levels), reducing the area available to particular species.

The major factor contributing to habitat loss within the district is the extensive shoreline development (cottages and lodges).

(iii) Invasion of Competitor Species

Rock bass, smelt, perch, and in brook and rainbow trout waters, smallmouth bass, all compete both directly and indirectly with other fish species for food and habitat, and prey upon juvenile sport fish.

The spread of competitor species throughout the district has been rapid. In the last few years rock bass have become abundant in over 90% of the District's lake trout lakes.

(iv) Water Level Fluctuations

There are 79 dams in Minden

District. Water level fluctuations resulting from the operation of these dams directly affect 85.5% of the total lake trout lake area within the District. Impacts to lake trout can be severe. Exposure of unhatched eggs, insufficient wave-action cleaning of spawning shoals, and the instability of littoral zones may all result in natural recruitment failure.

(v) Acid Precipitation

Of 150 lakes studied in Minden District, 1 (0.7%) is classified as acidified, and 32 (21.3%) are classified as extremely sensitive, to acidification. Acid precipitation has the potential to increase egg and fry mortality in spring-hatching fish species, can increase the physiological stress on all fish species, and may lead to the release of heavy metals from the lake bottom.

(vi) Loss of Whitefish Fisheries

The majority of whitefish fisheries are declining in the District. It is suspected that the introduction of smelt is one of the major factors in this decline, along with habitat loss and water level fluctuations.

(vii) Over-harvest of Lake Trout

The present angler harvest of lake trout exceeds allowable harvest (i.e. recruitment) by more than 3 times (Table 1). However, this estimate assumes that the allowable harvest of stocked and native lake trout fisheries are the same. It is very likely that the allowable harvest of stocked lake trout is higher. How much higher has yet to be determined. Regardless of the exact level, there is no doubt that lake trout are currently being over-harvested. Over-harvest will result in a reduction of native lake trout and increased reliance upon stocked fish. Fish community imbalance will occur with an increase in non-target species (i.e. herring) as lake trout are removed. Overall the quality of lake trout angling will be reduced if over-harvest continues.

(viii) Limited Access To The Fisheries Resource

Approximately 17% of the District's annual fisheries production occurs in lakes surrounded by private property which are relatively inaccessible to the general public. Sixty-five percent of the total brook trout and 18% of the total rainbow trout production occurs on lakes completely surrounded by private land.

At present, agreements exist allowing public access to the lakes stocked by the District. However, access may be closed by the landowner at any time, resulting in the loss of that lake's sport fish production to the public.

(ix) Dependence Upon Stocked (Artificial) Trout Fisheries to Meet Angler Demand and the False Public Perception that Stocking Solves All Problems

Currently, approximately 41% of the District angling opportunities depend upon continued trout stocking. A majority of the brook trout, all of the rainbow trout and splake, and approximately 33% of the lake trout caught are stocked fish.

If, for some reason, hatchery fish are unavailable, Minden District will be unable to meet angler demand (i.e. fisheries target). In addition, natural fisheries will be subjected to increased angler pressure.

This dependence on stocking has created a false public perception that stocking solves all problems. The stocking of unsuitable waters is not only a waste of expensive hatchery fish, but also can create additional problems via competition with existing native fish.

(x) Large Number of Lakes Presently Not Supporting Sport Fish Species, or for Which Complete Inventory Data is Unavailable

Approximately 1000 lakes in Minden District fall into this category. These lakes are small, however, collectively they could contribute substantially to District sport fish production. This production potential is predominantly in warmwater species (e.g. bass).

(xi) Projected High Demand for Bass (Smallmouth and Largemouth)

By the year 2000 it is anticipated that bass will be harvested at, or slightly beyond the allowable harvest level. If additional bass fisheries are not established, then an over-harvest situation resulting in reduced angler success and/or bass production could occur.

(xii) Resource User Conflicts

The two main issues arising due to differing user-group priorities are:

(1) Economic benefits of shoreline development versus maintenance of the fisheries resource and angling recreation benefits.

(2) Control of water levels for flood prevention, navigation and recreation versus fisheries management.

In addition to these are the possible conflicts of forestry and mineral extraction versus maintenance of the fisheries resource and angling recreation benefits.

These conflicts serve to compound problems discussed in this section. When selecting appropriate management actions these conflicts must be considered.

(xiii) Need for Effective Public Education

For the effective management of the fisheries resource, public insight and appreciation for all of the above problems is necessary.

2.6 PRESENT MANAGEMENT PRACTICES

The current Minden District Fisheries Management Program consists of;

- Enforcement,
- Regulatory Control,
- Habitat Inventory,
- Habitat Rehabilitation,
- Habitat Protection,
- Fish Population Assessment,
- Fish Stocking,
- Fisheries Extension, and
- Bait Fish Harvest Management,
- Co-operative management projects e.g. Community Fisheries Involvement Program (C.F.I.P.).

A detailed description of current management practices, pertaining to the major management issues (problems) occurring within Minden District, is provided in the Background Information and Options Summary document.

3.0 MANAGEMENT DIRECTION

Provincial fisheries policy, fisheries management principles, and the direction established in the Minden District Land Use Guidelines (D.L.U.G.) are the basis upon which this Fisheries Management Plan has been developed.

The purpose of this section is to present the strategies and tactics necessary to achieve Minden District's long term fisheries management objectives and targets. The relationship between broad fisheries management objectives, targets, species contributions, solutions to management problems and strategies and tactics is presented in schematic form on the following page (Figure 3).

3.1 GENERAL FISHERIES MANAGEMENT OBJECTIVES AND DIRECTION

(i) Objective

The broad objective for fisheries management in southern Ontario is to provide opportunities for recreation and economic benefits consistent with the maintenance of healthy fish communities.

(ii) Direction

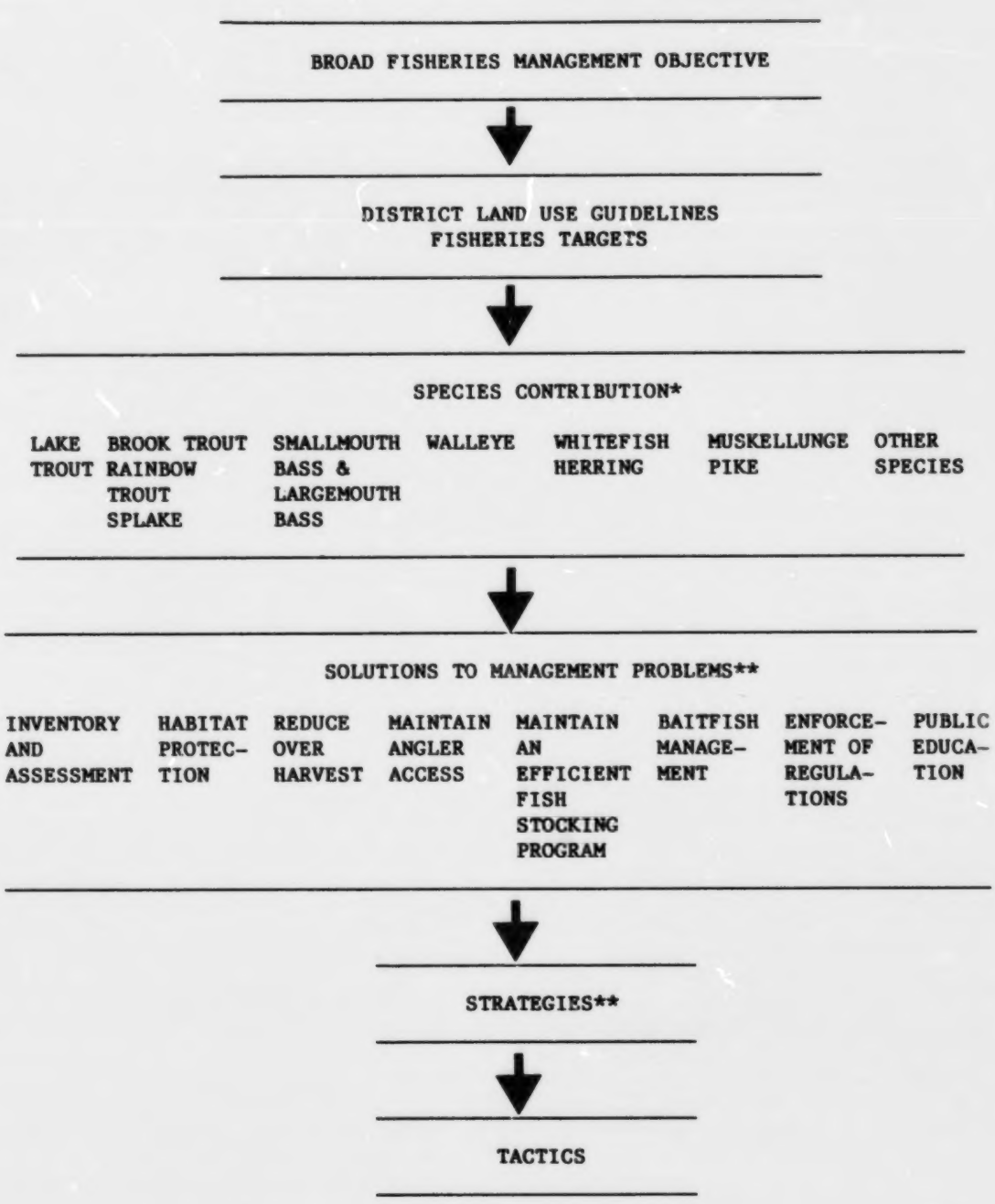
To meet the fisheries management objectives the following basic principles will be utilized:

- ensure harvests are consistent with the productivity of individual fisheries;
- protect critical fish habitat including spawning beds, nursery areas and water quality, and carry out restoration where necessary;
- manage fish communities rather than individual species, (i.e. strengthening or re-establishment of fish communities will normally emphasize native species);
- develop a greater knowledge of fish populations and fish habitat conditions, and increase scientific knowledge of the fisheries resource for more effective management;
- maintain access to recreational fishing waters and improve the distribution of fishing pressure;
- assist in the marketing and recreational use of presently under-utilized fish species;
- create and maintain fisheries through a biologically sound fish stocking program to provide angling opportunities in areas of high demand;
- undertake cooperative fisheries management activities with conservation authorities, organized groups and landowners e.g. C.F.I.P.;
- participate in monitoring the effects of acid rain and other contaminants on fisheries;
- encourage municipalities, private landowners and other agencies to support the objectives and intent of this Plan;
- develop a greater public understanding of fisheries, their values, problems and management requirements; and
- implement an effective enforcement program involving a balance of reactive regulatory and proactive preventative enforcement.

The future role of the Community Fisheries Involvement Program (CFIP) in fisheries management is currently under review. Changes may occur which will affect future strategies and tactics.

Negotiations with native groups concerning Native Fishing Agreements are currently taking place. The outcome of these negotiations may affect the management direction in the Plan.

FIGURE 3: SCHEMATIC: RELATIONSHIP BETWEEN BROAD OBJECTIVES, TARGETS, SPECIES CONTRIBUTIONS, STRATEGIES, AND TACTICS



* These are discussed in detail, beginning on page 12
** These are discussed in detail, beginning on page 15

3.2 SPECIFIC FISHERIES MANAGEMENT OBJECTIVES, TARGETS AND STRATEGIES

Specific objectives, targets and strategies have been developed to direct management effort to enable the Ministry to meet demands placed upon the fishery. These objectives and targets reflect provincial interests, and have been refined consistent with the capability of the local resource and the demands of user groups.

3.3 SPORT FISH

(i) Objectives:

- to meet demand within the limits of a wisely managed and rehabilitated resource; and
- to prevent the extinction of any native species.

(ii) Target:

- to maintain the present diversity of angler experience by providing 412,000 angler opportunities based on an annual allowable harvest of 123,770 kg. The target provides for average angler success rates of 0.2 kg fish/opportunity for coldwater fish species and 0.5 kg fish/opportunity for warmwater fish species.

Discussion:

The entire potential fish yield from existing fisheries within Minden District is required if targets for angler opportunities are to be met and reasonable angler success standards maintained. In addition, it will be necessary to establish new fisheries in currently under-producing waters.

This represents a change in the fisheries target originally presented in the District Land Use Guidelines (DLUG). The DLUG target was: to provide 1.4 million angler opportunities by the year 2000.

Given 1.4 million angler opportunities and an allowable harvest of 120,000 kg, the resultant angler success standard is 0.086 kg of fish per opportunity.

Completion of analysis of the fisheries resource data in the preparation of this Plan illustrated the need to refine the DLUG sport fish target to more realistically reflect resource use and angler success.

Upon examination of District information it became evident that the Provincial Angler Survey originally used to develop the DLUG targets greatly overestimated the annual angling opportunities within Minden District (Table 1). A revised estimate places the current angler opportunities at approximately 358,500. Based on this, and anticipated population increases a Minden District sport fish target of 411,900 (approximately 412,000) angler opportunities has been adopted. In addition, provincial angler success standards of 0.2 kg fish/opportunity for coldwater fish species and 0.5 kg fish/opportunity for warmwater fish species have also been adopted. These standards are similar to current success rates within Minden District.

The management direction to achieve stated objectives and targets is first presented by fish species and then by management problem. Specific strategies and tactics are identified in the Management Direction by Problem section (p. 15).

(iii) Management Direction by Species:

The sport fish objective and target has been divided into seven species components to provide for individual management of:
1) lake trout,
2) brook trout, rainbow trout, and splake,
3) smallmouth bass and largemouth bass,
4) walleye (yellow pickerel),
5) whitefish and herring,
6) muskellunge and pike (northern), and
7) non-traditional species (perch, ling, suckers, carp, smelt, rock bass, etc.).

Table 1 summarizes the development of the target by species. A discussion of each species or species group's contribution to the sports fish objective/target follows:

Lake Trout:

The direction within the District is to:

- maintain potential production of lake trout;
- provide angling opportunities (and success standards) at a level consistent with maintenance of lake trout stocks; and
- protect and rehabilitate native lake trout populations.

The present harvest of lake trout exceeds the potential supply. In addition, stresses such as habitat loss, water level fluctuations, competitor species introductions, and acid precipitation all serve to decrease the potential supply of lake trout. Management effort will be directed at maintaining or expanding lake trout yield by reducing the impact of these stresses, reducing the angler harvest to the level of resource capability and, where possible, creating new lake trout fisheries through stocking. In order to reduce angler harvest, it will also be necessary to shift angler pressure to other fish species.

Naturally, self-sustaining lake trout fisheries must be recognized and protected. Protection not only includes stress reduction but also includes maintaining the genetic integrity of these stocks. Non-self-sustaining lake trout fisheries will be managed first, to eliminate the factors preventing reproduction and second, to provide optimum recreation days. Lake trout fisheries identified as being incapable of maintaining self-sustaining fisheries will be managed to provide maximum recreation days (i.e. put and take artificial fisheries).

Given the importance of the lake trout fishery and the number of stresses acting upon this fishery, lake trout are given top priority in Minden District.

Brook Trout, Rainbow Trout, and Splake

The direction within the District is to:

- protect/rehabilitate native brook trout populations; and
- maintain potential production of brook trout, rainbow trout, and splake through stocking to provide maximum number of angling opportunities.

There is a high demand for both brook and rainbow trout within Minden District. Brook and rainbow trout are almost exclusively artificial fisheries, supported by fish stocking, hence allowable harvest is equal to angler harvest. However, the potential for

expansion of these fisheries is minimal, and existing fisheries are heavily stressed, primarily due to the introduction of competitor species (perch, rock bass, etc.). Management effort will be directed toward maintaining and/or expanding existing brook trout and rainbow trout angling opportunities.

Although scarce, native brook trout populations are present within Minden District. Management effort will be directed toward identifying these native fisheries and protecting them.

Splake are a recent introduction to Minden District. It has been shown experimentally that splake in inland waters have higher survival and growth rates than brook or rainbow trout when stocked in lakes with competitor species. Splake have extended life spans (16 years plus) and grow to sizes of 5 kg or more. Management effort will be directed toward establishing and maintaining put-and-take splake fisheries in brook and rainbow trout lakes containing competitor species, and in other suitable under-producing waters, to provide additional angling opportunities as alternatives to lake trout angling.

Smallmouth and Largemouth Bass

The direction within the District is to:

- increase production of bass to meet projected angler demand.

Smallmouth and largemouth bass are an important component of the District's fishery. These two species combined produce 48% of the District's allowable harvest. It is projected that by the year 2000 demand will exceed current supply. Management effort will be directed toward increasing bass production and angler opportunities through the establishment of self-sustaining bass fisheries in presently barren waters and maintaining and enhancing existing bass fisheries.

Walleye

The direction within the District is to:

- maintain potential production of walleye; and
- increase angler opportunities to allowable harvest levels.

The current supply of walleye exceeds projected demand. However, management action will concentrate on maintaining existing supply providing for increased angler opportunities and/or increased angler success rates. In addition, an effort to establish high quality walleye fisheries as alternatives (winter and summer) to lake trout will be undertaken.

Whitefish and Herring

The direction within the District is to:

- maintain potential production of whitefish and herring;
- protect/rehabilitate whitefish populations; and
- encourage angler utilization of herring.

Whitefish and herring are similar species, and lack of data makes it impossible to separate these. However, District whitefish populations are in a state of decline, primarily due to the introduction of smelt. Herring are under-utilized by Minden District anglers. As a result, herring populations have expanded, and in some cases are competing with top

predators, such as lake trout (e.g. Drag Lake). Management effort will be directed toward protecting and rehabilitating whitefish fisheries, the removal of smelt, and encouraging angler utilization of herring.

Muskellunge and Pike

The direction within the District is to:

- maintain potential production of muskellunge and pike; and
- increase angler opportunities to allowable harvest levels.

The current supply of muskellunge and pike exceed projected future demand for these species. However, the allowable harvest of muskellunge was calculated using pike criterion. This is very likely an overestimate. Once better muskellunge production information is available, refinement of the muskellunge/pike objective will occur.

Management effort will be directed toward maintaining existing yields and providing for increased angler opportunities and/or increased angler success rates.

Non-Traditional Species (Perch, Ling, Suckers, Carp, Smelt, Pumpkinseeds, Rock Bass, etc.)

The direction within the District is to:

- encourage angler utilization of these species; and
- prevent their further expansion.

Perch, ling, suckers, carp, smelt, pumpkinseeds, rock bass, etc. compete both directly and indirectly with more traditionally sought sport fish for food and habitat, and prey upon juvenile sport fish. In addition, these "competitor fish species" are not actively sought by anglers within Minden District and when caught are often returned alive. Angler selection has enabled these competitor species to become over-abundant in many waterbodies, intensifying their impact.

Management action will be directed toward preventing the further introduction of competitor species, and reducing their abundance in selected waterbodies. In addition, angler utilization of these species will be encouraged to create opportunities, as well as reducing their impact upon trout, bass, walleye, muskellunge, pike, whitefish and herring. To meet the overall sport fishing target of 412,000 angler opportunities it will be necessary to provide, at a minimum, some 40,000 "other species" angling opportunities (Table 1).

(PLEASE NOTE: Separate species contributions have been designed to highlight the role of each component of the sport fishery. However, these species objectives are not independent, in that <u>all</u> must be met to accomplish the sport fish targets and objectives).

(iv) Management Direction by Problem:

To meet the District fisheries objectives current fish species production levels must be maintained, and in some cases expanded (Table 1). To maintain (and enhance) these fisheries it will be necessary to:

- monitor the status of these fisheries and the effectiveness of management programs;
- protect and enhance habitat;
- reduce over-harvest;

- maintain angler access;
- maintain an effective, biologically sound fish stocking program;
- enforce regulations; and
- provide public education

Optional management strategies and tactics designed to effectively manage the fisheries by reducing the impacts of stresses, as discussed in the Problems and Issues Section, were presented in the Background Information and Options document. Only those tactics that are technically, economically and socially acceptable were considered. Public response (Appendix I) was favourable toward all of these optional strategies and tactics. A basic analysis of each tactic is available in the detailed background document. The identification of new and innovative ways to accomplish strategies is an ongoing process, and when better tactics are identified they will be utilized.

Emergency situations such as storm related damage to spawning areas will arise, and cannot be planned for. These situations will be dealt with in a manner consistent with priorities identified in this Plan.

The following summarizes the proposed management actions (strategies and tactics) necessary to effectively address the identified problems:

a) <u>Problem:</u> Need for Additional Inventory Data

<u>Solution:</u> Inventory and Assessment

(i) Strategy: To evaluate the effectiveness of fisheries management programs it is necessary to monitor the resource status and its response over time to management action.

Tactics:
- establish a District "type" lake system (with the large number of District lakes it is impossible to collect information on all of them. Information from similar lakes can be applied across the District);
- creel census (resource user survey);
- water chemistry updates;
- stream survey;
- lake survey;
- identify barren/under-producing waters suitable for warmwater species introductions and/or trout stocking;
- critical habitat evaluation (including spawning areas);
- sonic tagging of lake trout to identify lake trout spawning areas;
- identify extent and degree of water level fluctuation impact on existing lake trout fisheries;
- fish stocking assessment;
- fish contaminant level monitoring;
- monitor habitat quality, (acidification, susceptability to development, etc.); and
- stream habitat rehabilitation assessment.

(ii) Strategy: Assess the effectiveness of innovative fisheries management techniques (Experimental Management).
Without enhancement funding, no large scale experimental management programs can be initiated by Minden District.

Tactics:
- cooperate with other agencies interested in carrying out relevant experimental programs within the Minden District; and
- when funding becomes available initiate experimental management programs that deal specifically with Minden District fisheries management issues, (e.g. lake

trout hooking mortality, fish stocking densities, effectiveness of spawning bed rehabilitations, effects of water level fluctuations, coarse fish removal, etc.).

b) Problem: Habitat Loss

This includes the physical alteration of habitat, reduction of water quality, water level fluctuations, acidification, competitor species introductions, and the loss of lake whitefish fisheries.

Solution: Habitat Protection

(i) Strategy: Minimize the impact of development on the District's fisheries including both the physical loss of habitat and reduction of water quality.

Tactics:
- review of both internal plans (timber, road proposals, parks development, etc.) and external plans (dredging, filling, mining, severance, subdivision, etc.) to protect significant fisheries habitat (as per Federal Fisheries Act);
- ensure protection of fisheries habitat through the implementation of the Ministry's Policy for Integrated Resource Management;
- implement a staff training program regarding, the identification and importance of significant fisheries habitat, potential development impacts, and enforcement of relevant acts and regulations (Lakes and Rivers Improvement Act, Federal Fisheries Act, Beach Protection Act, Public Lands Act, etc.);
- provide public education stressing the importance of various habitat types and the impact shoreline development has, identifying the need for a review of all proposed shoreline alterations (retaining walls, dredging, filling, clearing of shoreline and addition of sand);
- develop a joint Ministry of the Environment, Ministry of Natural Resources District Strategy regarding policies for shoreline development;
- rehabilitate degraded fisheries habitat (spawning bed improvement, brush piles for bass, etc.); and

o investigate point source pollution complaints; and

- encourage co-operative maintenance/rehabilitation of fisheries habitat between M.N.R., other Government Agencies and the Public (e.g. C.F.I.P. Programs).

ii) Strategy: Ensure that water level control systems are operated in a manner compatible with fisheries management.

Tactics:

o negotiate water level control guideline agreements with those agencies administering the dams (Parks Canada, Orillia Light and Power) ;
- public education program to identify the need for early fall stabilization of water levels on lake trout lakes with an identified water level problem and enlist public support; and
- maintain a Ministry of Natural Resources representative on the Haliburton Highlands Water Management Advisory Committee.

(iii) Strategy: Develop a tactical plan to deal with acidification within Minden District.

Tactics:
- continue monitoring the rate of acidification;
- encourage and support acid precipitation research; and
- develop a liaison with agencies involved in assessing acidifications impact and the effectiveness of various counteractive measures.

(iv) Strategy: Reduce the stress on sports fisheries caused by the introduction of competitor fish species (rock bass, smelt, perch, etc.).

Tactics:

- inform the public of the negative impacts to the sports fisheries resulting from illegal introduction of competitor species;
- review private applications for live fish transfer, ensuring impacts to existing sports fisheries will not occur;
- encourage removal of competitor species by angling;
- removal of competitor species through Ministry of Natural Resources programs (i.e. netting, etc.); and
- regulatory control by implementing a no live-bait fish policy on select trout lakes.

(v) Strategy: To prevent the loss of the lake whitefish fisheries within the District.

Tactics:

- encourage further research in determining cause of whitefish decline;
- encourage removal of smelt;
- assess the effectiveness of implementing additional regulatory controls to protect whitefish; and
- continue moratorium on dip-netting of whitefish within Minden District.

c) <u>Problem:</u> over-harvest of lake trout

<u>Solution:</u> Reduce over-harvest

(i) Strategy: Reduce the over-harvest of naturally reproducing lake trout populations.

Tactics:

- conduct a user survey to determine the most acceptable and effective means to reduce lake trout over-harvest;
- assess the reproductive status of existing lake trout fisheries;
- implementation and enforcement of further regulatory controls. A recommendation has been made to close winter fishing on Drag Lake in Dudley/Dysart Townships and Stocking Lake in Havelock Township. Drag Lake has been closed to Winter Lake Trout Fishing for 1987 by Minister's Order. Public consultation regarding this proposal took place in the fall of 1985. Many other regulatory controls for reducing over-harvest are possible, including; no live bait, no ice huts, one line in winter, extended season closures, and reduced creel limits. This is not a complete list of the possibilities and now that a resident angling licence has been instituted the range of possibilities is even more extensive (e.g. seasonal quota, a separate lake trout tag, etc.). At this time it is impractical to discuss all of the possibilities further. However, prior to the implementation of any new regulatory controls public consultation will occur;
- stocking to create additional artificial lake trout, splake, brook trout, and rainbow trout fisheries as alternatives to native lake trout;
- encourage utilization of underharvested species (e.g. walleye, herring, perch, panfish, etc.);
- introduction and establishment of self-sustaining warmwater fisheries (e.g. bass, muskellunge, walleye) to under-producing waters to create high quality warmwater fisheries as alternatives to lake trout;
- improve access to under-utilized fisheries; and
- promote research into, and angler compliance with a catch-and-release lake trout program.

d) **Problem:** Limited access to the fisheries resource

Solution: Maintain Angler Access

(i) **Strategy:** Maintain and/or expand public access to the fisheries resource.

Tactics:
- obtain written landowner agreements for all managed fisheries with public access over private property (priorities are for stocked fisheries);
- inform the public as to the nature and importance of access agreement properties;
- establishment of access trails to inaccessible fisheries; and
- ensure through the plan review process (i.e. subdivisions, severances, etc.) that resource access is protected.

e) **Problem:** Dependance upon stocked trout fisheries to meet angler demand

Solution: Maintain an Effective, Biologically Sound Fish Stocking Program

(i) **Strategy:** Place into perspective the importance of fish stocking within Minden District, recognizing the cost of fish stocking and ensuring the wise use of this resource.

Tactics:
- maintain a 5 year Fish Stocking Plan;
- develop comprehensive guidelines for the Minden District fish stocking program;
- public education, presenting the rationale for the District fish stocking guidelines; and
- annually print and distribute the Fish Stocking List for the previous year.

(ii) **Strategy:** Utilize the fisheries production potential in presently barren/under-producing waters.

Tactics:
- introduction of warmwater fish species (i.e. bass, walleye, muskellunge) to create self sustaining fisheries in all suitable waters;
- stock rainbow trout, brook trout, lake trout and/or splake to create put-and-take trout angling opportunities in all suitable barren/under-producing waters;
- introduce and establish or re-establish, self-sustaining lake trout populations wherever possible; and
- provide fisheries management expertise and encourage establishment of sports fisheries in private waters.

(iii) **Strategy:** Expand the District bass (smallmouth and largemouth) production.

Tactics:
- introduction and establishment of self-sustaining bass fisheries to barren waters;
- encourage catch and release bass fisheries; and
- maintain Nogies Creek Fish Sanctuary as a source for future adult bass transfer stock.

f) **Problem:** Need to enforce compliance with regulations

Solution: Maintain/improve current level of enforcement

(i) **Strategy:** Develop a District Fisheries Enforcement Plan, recognizing Enforcement as an essential component of all aspects of fisheries management, from habitat protection to harvest control.

Tactics:

- establish fisheries enforcement program which reflects fisheries resource priorities (i.e. lake trout and habitat protection being top priority).

Problem: **Need for Effective public education**

Solution: **Public Education**[1]

(i) Strategy: To effectively deliver various programs and messages to the public.

Tactics:

- maintain a current list of contact people (cottage association presidents, interest group representatives, and interested individuals);
- distribute existing fisheries literature (pamphlets, etc.);
- attend association meetings as requested; and
- provide news releases regarding specific fisheries concerns;

o encourage public participation in Ministry programs (e.g. C.F.I.P., Volunteer Creels, Report a Poacher etc.).

3.4 BAIT FISH

(i) Objective:

- to maintain current production.

(ii) Target:

- to provide at a minimum, the present level of harvest of 25,000 dozen bait fish (per annum).

Discussion:

The demand for bait fish is expected to increase at a rate proportional to the increase in sport fisheries.

Although no accurate inventory data exists, the bait fish resource in Minden District is thought to have the potential to support an expanded industry.

(iii) Management Direction:

Management effort will be directed toward determining allowable harvest and encouraging wise use of the bait fish resource.

(iv) Strategies and Tactics:

Strategies and tactics were selected in the same manner as those for sport fish (see page 16).

Strategy: Increase management effort directed toward the commercial bait fish resource.

Tactics:

- encourage research to determine allowable harvest levels for bait fish;
- refine and assess the effectiveness of the current bait fish block management system;
- actively enforce commercial bait fish regulations (i.e. legal bait);
- species and harvest/sale records; and
- encourage bait fish rearing/harvest in waters unsuitable for sport fish.

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[1] Specific public education requirements have been identified within each strategy and tactic above, where appropriate.

4.0. IMPLEMENTATION

4.1 GENERAL

This Fisheries Management Plan provides the direction for fisheries management within the Minden District to the year 2000. The strategies identified will be implemented through:

- preparation, maintenance, and annual updating of a 5 year Implementation Schedule identifying specific tactics necessary to meet the targets and strategies set out in this Plan;
- specific projects and programs funded and approved through the Ministry's work planning process;
- participation in the planning and undertaking of projects/activities of other programs within the Ministry (i.e. Integrated Resource Management);
- involvement in the review of project or development proposals of other government agencies and the private sector where the Ministry has the opportunity to review such proposals; and
- cooperative management efforts with clubs, associations and municipalities (e.g. C.F.I.P.).

All fisheries management activities will contribute toward meeting the objectives and targets and will be consistent with strategies identified within this Management Plan. Annual work plans will reflect tactics and priorities established within this Fisheries Management Plan. Responsibility for the preparation of this Fisheries Management Plan has been assigned to the District Manager, while responsibility for its approval rests with the Algonquin Regional Director. This Plan will be reviewed at 5 year intervals or whenever major revisions are necessary.

All amendments to this document will follow the procedure identified within the "Procedures For Amending District Land Use Guidelines" as applicable.

Fisheries management projects to be undertaken are subject to the requirements of the Environmental Assessment Act.

4.2 FIVE YEAR FISHERIES MANAGEMENT DIRECTION

To effectively manage the fisheries it is essential to maintain a balanced fisheries management approach, addressing all of the "problems" which impact the fisheries.

Over the next 5 years emphasis will be placed on:

- inventory and assessment to evaluate the effectiveness of management tactics (stocking assessment, success of habitat rehabilitations, etc.) and provide essential resource base information (e.g. identification of under-producing waters);
- habitat protection and rehabilitation, concentrating on lake trout and walleye spawning areas, preventing the further spread of competitor species (e.g. rock bass and smelt) and reducing the impacts of water level fluctuations on spawning fish;
- reducing the over-harvest of naturally reproducing lake trout by diverting angler pressure to stocked trout fisheries and high quality warmwater fisheries, and determination and implementation of effective additional regulatory harvest controls;

- maintaining angler access by obtaining written agreements for stocked lakes on private property, improving access to under-utilized fisheries and establishing a sign program encouraging responsible use of private, access agreement property;
- maintaining an effective, biologically sound fish stocking program with emphasis on rehabilitating those fisheries with potential for natural reproduction, stocking to create additional trout angling opportunities, and introduction of warmwater species (e.g. bass, walleye, etc.) to presently under-producing water;
- increasing bait fish management to improve our knowledge of bait fish in Minden District, ensure continued bait fish production and refine and assess the effectiveness of the current block system;
- increasing public education to encourage understanding and participation in protecting and rehabilitating fisheries (e.g. C.F.I.P.); and
- continuing effective enforcement.

4.3 IMPLEMENTATION SCHEDULE

The management tactics proposed for specific locations in the next 5 years (1986-1990) have been identified and are listed in the Implementation Schedule (Table 2) and mapped (Figure 5).

Tactics to be undertaken with present management capability (i.e. funding) are identified as Priority 1. General fisheries administrative duties have not been included in this schedule. However, they are essential and often very time consuming; for example, the preparation of the annual fisheries work plan.

Management tactics over and above present management capability are identified as Priority 2. As funding becomes available these Priority 2 tactics will be implemented as per fisheries needs. The Priority 2 tactics listed are the most cost-efficient and effective means among the preferred tactics to enhance the basic fisheries management program.

Enhanced funding is necessary to:

- increase proactive management;
- refine estimates of fisheries production and projected demand/use;
- provide more in-depth analysis of stress-impacts to the District fisheries;
- improve angler success rates; and
- provide more complete public service.

The intensity of a management program referred to in the Implementation Schedule (Table 2) refers to the level of management effort. Extensive - involves broader and less detailed management effort. Intensive - generally involves more concentrated management effort; it may also be an expansion of the extensive program to include more waterbodies.

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NOTE: In the following Table 2
Priority #1 - refers to tactics carried out with current capability
Priority #2 - refers to tactics implemented with increased capability (i.e. funding or manpower)
Extensive/Intensive - refers to two different levels of management intensity. Intensive may refer to either a more detailed management program or simply expanding the Extensive program to cover more waterbodies.

TABLE 2: IMPLEMENTATION SCHEDULE - 1986 - 1990

ASSESSMENT AND INVENTORY

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Manage district fisheries by the "type lake system" (i.e. District "type" lakes and Provincial Assessment Unit "type" lakes).	Minden District	X		• Improve efficiency in monitoring and assessment of district's fisheries.
Establish a data base for the district "type" lakes				• Enable management of the "type" lake system.
• Extensive	Bark Bentshoe	X		
• Intensive	Portage		X	
	South Brady Head Pine Dalrymple Four Mile Redstone Davis Glamor Kennisis Miskwabi Mississagua Percy Crystal Gull Haliburton Kashagawigamog Birchy			

TABLE 2 (cont'd.)

ASSESSMENT AND INVENTORY (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Establish data base for the district type lakes cont'd.	Buller Depot Dog Little Gull Sludge Tedious Little Glamor			
Conduct a voluntary creel survey program	Minden District	X		• To determine population status and stocking success.
Conduct a Conservation Officer spot creel census program	Minden District	X		• To determine population status and stocking success.
Intensive creel census	Priorities - are trout waters and large warmwater lakes		X	• To determine harvest, population status, stocking success, growth rates, and food source, etc.
Lake Survey • Extensive: (3 lakes/yr.)	One Island Gregory's Pond Upper Redstone Little Buckhorn Goodwin (L'Azure) Cranberry North Freezy	X		• Identify lakes with potential for expanding and maintaining sports fisheries.

TABLE 2 (cont'd.)

ASSESSMENT AND INVENTORY (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Lake Survey (cont'd.)	South Freezy Buckhorn (Powderhorn) No Name Duck Other lakes identified via preliminary assessment			
• Intensive: (15 lakes/yr.)	Unsurveyed, coldwater lakes and large warmwater lakes		X	
Stream survey	Priorities are brook trout streams		X	• Identify streams with the potential for expanding and maintaining sports fisheries, and identify and protect native brook trout populations.
Water Chemistry Updates on coldwater lakes				
• Extensive: 10 lakes/yr. on a 15 year rotational basis	All coldwater lakes	X		• Evaluate the suitability of waterbodies for trout management.
• Intensive: 30 lakes/yr. on a 5 year rotational basis	All coldwater lakes		X	
Fish contaminant monitoring	Type lakes		X	• Public health service.

TABLE 2 (cont'd.)

ASSESSMENT AND INVENTORY (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Assess the reproductive status of lake trout fisheries	All lake trout lakes			• Increase the efficiency of the fish stocking program, maintain natural fish production and identify the need for rehabilitation.
• Extensive: Utilizing existing data and programs (i.e. Conservation Officer Creel Census)		X		
• Intensive: Specific data collection			X	
Preliminary inventory to identify under-producing/ barren waters and determine suitability for the introduction of sport fish species				
• Extensive: (3 lakes/yr.)		X		• Increase sport fish production.
	Gut			
	Cruiser			
	Cinder			
	Bottle			
	Second			
	Third			
	Fourth			
	North			
	Little Horseshoe			
	Duck			
	Cameron			
	Upper Welch			
	Sprat			
	Tingey			
	Blueglass			
	Neguanee			

TABLE 2 (cont'd.)

ASSESSMENT AND INVENTORY (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
• Intensive: (15 lakes/yr.)	All suitable accessible waters		X	• Increase sport fish production.
Fish Stocking Assessment • Extensive: Utilizing C.O. spot creel and voluntary creel census programs	All stocked waters	X		• Ensure efficient use of hatchery fish.
• Intensive specific data collection			X	
Conduct user survey to determine the most acceptable and effective means to reduce lake trout over-harvest	Minden District	X		• Control the over-harvest of lake trout with minimal public conflict.
Encourage research into the acceptability and effectiveness of catch and release fisheries for lake trout	Minden District	X		• Explore this possibility as a means to increased angler opportunities for lake trout while reducing harvest.

TABLE 2 (cont'd.)

ASSESSMENT AND INVENTORY (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Identification and evaluation of lake trout spawning shoals				• Enable protection and identify needs for rehabilitation.
• Extensive: (2 lakes/yr.)	Kennisis Percy Miskwabi Haliburton Mississagua Catchacoma Moore Kashagawigamog Soyers Stormy	X		
• Intensive: (5 lakes/year and/or sonic tagging)			X	
Critical habitat evaluation (e.g. spawning areas, nursery areas, etc.)	Priorities are bass, walleye, and muskellunge lakes		X	• Ensure protection and identify needs for rehabilitation.
Stream habitat rehabilitation assessment	Priorities are brook trout streams		X	• Identify areas in need of rehabilitation.
Identify degree and extent of water level fluctuation impacts	Minden District		X	• Identify areas where further modification to the water level regime would improve fisheries.

TABLE 2 (cont'd)

ASSESSMENT AND INVENTORY (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Monitor the sensitivity to acidification in sport fish lakes	Minden District		X	• Determine the extent of the problem and the rate of change in Minden District.
Develop a liaison with agencies involved in studying acidification impacts and the effectiveness of various proposed solutions	Minden District	X		• Provide assistance wherever possible in the research of this problem and the investigation of solutions.
Encourage and support acid precipitation research	Minden District	X		• Illustrate Minden District's committment to assisting in research of this problem.
Encourage research into the decline of whitefish and ways of rehabilitating declining stocks	Minden District	X		• Assist in determining the reason for decline, and methods to alleviate it.
Cooperate with other agencies interested in carrying out relevant experimental programs	Minden District	X		• Encourage research into fisheries management issues that need to be addressed, but, are beyond District capabilities.
Initiate experimental management programs that deal specifically with Minden District Fisheries Management Issues	Minden District		X	• Evaluate the effectiveness of innovative management techniques.

TABLE 2 (cont'd)

HABITAT PROTECTION

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Plan review - both external and internal plans	Minden District	X		• Protect habitat essential to maintain productive fisheries.
Develop a joint MNR/MOE strategy regarding shoreline development	Minden District	X		• Minimize the impacts of development.
In conjunction with the Ministry of the Environment assess the susceptability to development of lake trout lakes	All District lake trout lakes with the potential for development	X		• Minimize the impacts of development on on lake trout lakes.
Ensure implementation of the Ministry's Policy for Integrated Resource Management, on all MNR activities and encourage this on private lands (e.g. logging setbacks)	Minden District	X		• Protect significant fisheries habitat.

TABLE 2 (cont'd.)

HABITAT PROTECTION (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Public education regarding the importance of fisheries habitat and impacts of shoreline development	Minden District			• Encourage understanding and support of habitat protection programs.
• Extensive		X		
• Intensive			X	
Rehabilitate degraded fisheries habitat				• Increase natural lake trout production.
• Extensive: (1/yr.)	Maple Davis Crystal Moore Kashagawigamog	X		
• Intensive: (5/yr.)	Priorities are lake trout and walleye spawning areas		X	
Public Education regarding the impacts of competitor species introduction	Minden District			• Reduce the spread of competitor species.
• Extensive		X		
• Intensive			X	

TABLE 2 (cont'd.)

HABITAT PROTECTION (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Public Education regarding the use of angler pressure to reduce competitor species	Minden District			• Reduce the overabundance of these competitor species and provide additional angler opportunities.
• Extensive		X		
• Intensive			X	
Implementation and enforcement of a no - live bait fish policy on selected brook trout lakes	Stocking Lake (in addition to those already in regulation)	X		• Reduce the chance of competitor species introduction.
MNR removal of competitor fish species, including use of piscicide where appropriate	Priorities are brook and rainbow trout lakes		X	• Decrease competition with sport fish species.
Negotiate/maintain acceptable water level control agreements with those agencies administering dams	Minden District	X		• Reduce the impacts of water level fluctuation.
Maintain an MNR representative (i.e.District Biologist) on the Haliburton County Water Management Advisory Committee	Minden District	X		• Ensure that fisheries concerns are addressed by the committee.

TABLE 2 (cont'd.)

HABITAT PROTECTION (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Public Education regarding the effects of water level fluctuations on lake trout fisheries and the need for early fall drawdowns	Minden District			• Enlist support for early drawdowns, reduce impact to lake trout fisheries on selected lakes.
• Extensive		X		
• Intensive			X	
Investigate all point source pollution complaints and fish kills	Minden District	X		• Prevent future loss, and minimize existing damage to fisheries habitat.

TABLE 2 (cont'd.)

REDUCE OVER-HARVEST

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Establish one additional artificial lake trout, brook trout, or rainbow trout fisheries per year	Lakes identified via assessment	X		• Provide alternative fisheries to native lake trout.
Establish additional splake fisheries	See page 55	X		• Provide alternative fisheries to lake trout.
Establish 5 additional self-sustaining warm-water fisheries	See page 28	X		• Provide additional warmwater fisheries.
Implementation and enforcement of further regulatory controls*	Minden District	X		• Reduce over-harvest.
Public Education regarding: • the rationale, and need for catch and release angling of over-harvested fish species • encourage the utilization of under-harvested fish species (i.e. walleye, muskellunge, herring, perch, panfish, etc.)	Minden District	X		• Reduce over-harvest of lake trout, encourage utilization of under harvested species.

* Specific regulatory controls will be reviewed and evaluated and public consultation will occur before any significant changes are made.

TABLE 2 (cont'd.)

REDUCE OVER-HARVEST (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Encourage establishment of sports fisheries in private waters	Minden District			• Increase angling opportunities. Decrease pressure on over-harvested species.
• Extensive: (10/yr.)		X		
• Intensive: (20/yr.)			X	

TABLE 2 (cont'd.)

MAINTAIN ANGLER ACCESS

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Ensure that resource access is protected and/or improved through the plan review process	Minden District	X		• Ensure that the resource remains accessible to to the public.
Obtain written landowner agreements for all managed fisheries (i.e. stocked trout fisheries having access over private property)	Minden District	X		• Maintain public access.
Improve access to under-utilized fisheries				
• Extensive: (1 lake/yr.)	Anson Little Otter North Kabakwa Big East	X		• Increase angling opportunities and reduce pressure on over-harvested species.
• Intensive: (5 lakes/yr.)	Priorities are stocked coldwater fisheries		X	
Public education regarding the need for the public to appreciate and respect "private" access agreement property	Minden District			• Maintain public access agreements.
• Extensive		X		
• Intensive			X	

TABLE 2 (cont'd.)

MAINTAIN AN EFFECTIVE, BIOLOGICALLY SOUND FISH STOCKING PROGRAM

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Maintain and implement an up-to-date 5 year Fish Stocking Program	Minden District* (see Figure 4 and Appendix II)	X		• Ensure efficient use of hatchery fish, and protect native fish populations.
Develop a Minden District Fish Stocking Guidelines document	Minden District	X		• Provide direction and rationale for District Stocking Program.
Public Education describing District fish stocking program	Minden District			• Advise public of the rationale and role of fish stocking within Minden District, and enlist public support.
• Extensive		X		
• Intensive			X	
Annually print and distribute the Fish Stocking List for the previous year	Minden District	X		• Encourage utilization of stocked fisheries and direct angler pressure.
Review private applications for fish stocking ensuring that impacts to existing sport fish will not occur.	Minden District	X		• Prevent the introduction of competitor species.

* Depending on the results of ongoing stocking assessment waterbodies may be added or deleted from the fish stocking program.

TABLE 2 (cont'd.)

MAINTAIN AN EFFECTIVE, BIOLOGICALLY SOUND FISH STOCKING PROGRAM (cont'd.)

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Establish one additional artificial lake trout, brook trout or rainbow trout fishery per year	Four Corner Lake -other lakes identified via assessment	X		• Increase trout angling opportunities and reduce pressure on existing native lake trout fisheries.
Establish additional splake fisheries	Refer to Appendix II page	X		• Increase trout angling opportunities and reduce pressure on existing native lake trout fisheries.
Establish 5 additional self-sustaining warm-water fisheries	Walleye - Shadow Lake Head Lake Bass - 3 lakes to be identified via pre-liminary inventory	X		• Increase yield of warmwater fish species.
Maintain Nogies Creek Sanctuary as a brood stock source for bass transfer	Nogies Creek	X		• Brood stock source for bass transfers and maintain it's importance as a muskellunge research centre.

TABLE 2 (cont'd)

BAIT FISH RESOURCE MANAGEMENT

TACTIC	LOCATION	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Encourage research to determine allowable harvest of bait fish	Minden District	X		• Ensure wise use of the District bait fish resource.
Refine and assess the effectiveness of the current bait fish block management system	Minden District	X		• Ensure orderly utilization of the District bait fish resource.
Encourage bait fish rearing /harvest in waters unsuitable for sport fish	Minden District	X		• Utilize fish production potential in waters unsuitable for sport fish.

TABLE 2 (cont'd.)

ENFORCEMENT

TACTIC	LOCATION	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Enforcement of current acts and regulations	Minden District	X		• Protect fisheries habitat and control fish harvest.
Develop a District Fisheries Enforcement Plan	Minden District	X		• Ensure that enforcement effort reflects district priorities.
Public Education stressing the need for enforcement and the need for public participation in order to maintain an effective enforcement program	Minden District			• Increase the effectiveness of the enforcement program.
• Extensive		X		
• Intensive			X	

TABLE 2 (cont'd.)

PUBLIC EDUCATION*

TACTIC	LOCATION/LAKE	PRIORITY 1	PRIORITY 2	TACTIC INTENT
Maintain a list of contacts	Minden District	X		• Enable contact with users.
Distribute existing literature	Minden District	X		• Public education tool.
Attend association meetings as requested	Minden District	X		• Educate, encourage participation in various programs, and gather information regarding specific waterbodies.
Provide news releases regarding specific fisheries concerns	Minden District	X		• Public education tool.
Encourage Public Participation in Fisheries Management Programs including; C.F.I.P., Volunteer Creels, Report a Poacher etc.	Minden District	X		• Increase Public Participation in Fisheries Management Programs to improve District Fisheries, and increase public awareness.

* This is not a complete list of Public Education tactics. More specific public education tactics appear throughout the Implementation Schedule

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GLOSSARY

Allowable Harvest
The amount of fish flesh that can be removed annually from the water on a sustained basis.

Angler Opportunity
One person fishing for four hours.

Artificial Fishery
A Fishery which is maintained entirely through stocking of hatchery reared fish, to provide angling opportunities.

Bait Fish
Any fish that are legally harvested by the commercial bait fish industry.

Coldwater Species
Include the following in Minden District; lake trout, splake, brook trout, rainbow trout, whitefish and herring.

Coldwater Streams
Those streams having characteristics which would support brook and rainbow trout.

Commercial Fish
Any fish that are legally harvested by the commercial fishing industry.

Critical Fish Habitat
Any fish habitat required for the maintenance of a healthy fish population or otherwise identified as essential to the achievement of the Ministry's fishery program objectives.

Management
The judicious use of means to achieve ends. Management may have various levels of intensity. For example, if a high degree of technology is used, or if very careful tending is given, the management is high level.

Non-Resident
An angler whose principle residence is outside of Ontario.

Non-Traditional Species
Includes those sports fish not traditionally angled by District Anglers; perch, ling, suckers, carp, smelt, pumpkinseed, rock bass, etc.

Objective
A quantifiable and attainable end, which the ministry's efforts are intended to accomplish.

D.L.U.G.
District Land Use Guidelines for Minden District, 1983. An Ontario Ministry of Natural Resources Planning Document for the years 1980 to 2000.

Planning Area
The area for which a planning process is carried out, and for which a resource management plan is prepared.

Policy
The decision concerning the objectives to be achieved and the means of achieving them. For resource management planning, we are mainly concerned with the objectives, targets, and strategies.

Potential Production
The amount of fish flesh that can be grown on an annual basis within the District.

Resident
An angler whose principle residence is in Ontario. (A local resident angler would be one who can fish an area on a day-use basis; i.e., travel to the area, fish, and return home on the same day).

Southern Ontario
Southern Planning Region includes the following Districts: - Parry Sound, Bracebridge, Minden, Algonquin Park, Bancroft, Pembroke, Owen Sound, Wingham, Chatham, Simcoe, Aylmer, Huronia, Lindsay, Maple, Cambridge, Niagara, Tweed, Napanee, Carleton Place, Brockville, and Cornwall.

Sport fish
Any fish that are legally caught by angling.

Strategy
Planned actions or measures to achieve a desired end.

Resource Management
The wise use of a particular resource such as fish to achieve a specific end.

Tactic
A method devised to achieve one or more strategies.

Target
A quantified end to be achieved or completed by a specific date.

Underproducing Waters
Waters from which fish production is less than potential because of stresses such as water quality, species composition, over-harvest, or absence of desirable species.

Warmwater Species
Within Minden District this includes the following; walleye, smallmouth bass, largemouth bass, muskellunge, pike, perch, suckers and any other non-coldwater species.

Warmwater Streams
Those streams that support warmwater species.

APPENDICES

APPENDIX I - PUBLIC REVIEW

FIRST OPEN HOUSE

From October 9 - 12, 1985 an open house presenting Background Information and Management Options to the public was held at the Minden District office. Comments were encouraged and a questionnaire providing for general comments and a specific rating (very good, good, unsure, poor, very poor) of optional strategies and tactics was provided. Some 67 members of the public attended the open house. From this number 23 questionnaires were returned, representing approximately 34% of the participants. Written comments and the specific rating of each optional strategy and tactic were assessed.

All of the optional strategies or tactics presented, were rated favourably by the public.

The public review process indicated the need to establish better linkage between objectives, targets strategies and tactics with specific fisheries management problems. The organization of the Fisheries Management Direction Section, in the Final Plan reflects this need.

A more detailed summary of the first open house and public response is available at the Minden District office.

DRAFT PLAN OPEN HOUSE

On July 17th, 18th and 19th, 1986 a public review of the Draft Fisheries Management Plan was held at the Minden District office.

Letters were sent to all persons who attended the first open house and other interested groups or individuals. An enclosed letter gave the individual the opportunity to request a copy of the Plan and request a specific date and time to come into the District office to discuss the Plan. Notices placed in local newspapers also advertised the open house by appointment.

Copies of the Draft Plan for review, prior to the open house were requested and received by 132 groups and/or individuals.

The Draft Plan open house was attended by 57 persons representing a wide range of interests ranging from organized groups (i.e. The Ontario Federation of Anglers and Hunters, numerous Cottager Associations, local municipalities, Kawartha Region Conservation Authority and the press) to individual persons (i.e. local bait fish dealers, commercial bait fishermen, interested anglers and property owners). Comment sheets were provided to all those attending the open house.

Completed questionnaires were returned from 15 persons. In addition written submissions regarding the Draft Plan were received from 3 persons and comments and/or concerns expressed from 33 persons at the open house were also recorded.

A detailed summary of the Draft Plan open house and public response is available for review at the District office.

Following are questions from the questionnaire provided at the open house, and the associated public

response:

1. How would you improve this Plan?

The majority of the public felt the Plan was okay as it is. The basic sentiment appeared to be, get on with the job and time will tell how good the Plan is.

2. How do you find the Plan to read and understand?

23% said it was excellent, 54% said good, 15% said fair and 8% said it was poor.

3. Do you think the fisheries resource will be managed more effectively because of this Plan?

92% of the public said yes.

In total some 113 comments, concerns and/or issues concerning the Draft Plan were registered. Over half (55%) of these comments fell into 10 areas.

Of most concern were:
1. the need for more public education regarding fisheries management issues;
2. over fishing via winter angling; and
3. the impact of competitor species (i.e. rock bass) on sports fish.

The next areas of most concern were:
4. the need to implement a resident angling licence with revenues going toward fisheries management;
5. the need to increase fisheries enforcement effort;
6. encourage more public involvement in CFIP projects; and
7. better control of water level fluctuation impacts on the fisheries resource.

Finally, the third general area of concern included:
8. the need for better public access to the resource;
9. increased fish stocking program; and
10. more emphasis on walleye management.

The public review of the Draft Plan has provided a clear demonstration that the major public concerns and/or issues have been addressed. Those few issues not adequately dealt with in the Draft Plan have been incorporated in this Final Plan.

OPEN HOUSE - TORONTO

On December 9, 1986, a public review of the Fisheries Management Plans throughout Algonquin Region (excluding Pembroke) was held at Queen's Park in Toronto.

Public notice regarding this meeting was provided via newspaper articles and mailings and was co-ordinated by the Regional office.

A total of 27 people attended the open house. Of the 27, 2 (7.4%) had principle fisheries interest within Minden District (cottagers). Both individuals had attended earlier fisheries management plan open houses held at the District office.

No new issues or problems with the Minden District Fisheries Management Plan were raised during this open house.

APPENDIX II - LIST OF LAKES BY MAJOR SPECIES
(as of May, 1986)

MINDEN DISTRICT LAKE TROUT LAKES

Anson Lake	Hindon Township
Art Lake	Dysart Township
Basshaunt Lake	Guilford Township
Bat (Bear) Lake	Guilford Township
Beaver Lake	Cavendish Township
Beech Lake	Stanhope Township
+Big Trout Lake	Longford Township
Billings (Wolf) Lake	Glamorgan Township
Bitter Lake	Guilford Township
Bob Lake	Anson Township
Boshkung Lake	Stanhope Township
Bottle Lake	Cavendish Township
Bow Lake	Snowdon Township
Buckskin Lake	Monmouth Township
Canning Lake	Minden Township
Catchacoma Lake	Cavendish Township
Cavendish Lake	Cavendish Township
+Clean Lake	Havelock Township
+Crotchet Lake	Longford Township
Crystal Lake	Galway Township
Davis Lake	Lutterworth Township
+Delphis Lake	Dudley Township
+Drag Lake	Dudley Township
Eagle lake	Guilford Township
Esson (Otter) Lake	Monmouth Township
+Eyre (Black) Lake	Eyre Township
Fortescue Lake	Cavendish Township
Glamor (Bear) Lake	Glamorgan Township
Gold Lake	Cavendish Township
*Gooderham (Pine) Lake	Glamorgan Township
+Gull Lake	Lutterworth Township
Haliburton Lake	Harburn Township
Halls Lake	Stanhope Township
Havelock Lake	Havelock Township
*Horseshoe (Elsie) Lake	Minden Township
Johnson Lake	Havelock Township
Kabakwa (Peach) Lake	Stanhope Township
Kashagawigamog Lake	Minden/Dysart Township
Kelly Lake	Havelock Township
Kennisis Lake	Havelock Township
Klaxon (Horn) Lake	Guilford Township
Koshlong Lake	Glamorgan Township
Kushog Lake	Stanhope Township
Lipsy Lake	Guilford Township
+Little Black Lake (Little Clean)	Eyre Township
Little Bob Lake	Lutterworth Township
Little Boshkung Lake	Minden Township

* Remnant population - now stocked with splake.
+ Naturally self-sustaining population, currently not stocked.
All others stocked.

LAKE TROUT LAKES (cont'd.)

**Little Dudman (Wenona) Lake	Dudley Township
Little Kennisis Lake	Havelock Township
+Little Redstone Lake	Guilford Township
Long Lake	Dudley Township
Loon (Dudman) Lake	Dudley Township
Lutterworth (Devil's) Lake	Lutterworth Township
+Macdonald Lake	Havelock Township
Maple Lake	Stanhope Township
+Marsden (Marsh) Lake	Guilford Township
Miskwabi Lake	Dudley Township
Mississagua Lake	Cavendish Township
Monmouth Lake	Monmouth Township
Moore Lake	Lutterworth Township
Moose Lake	Harburn Townshp
Mountain Lake	Minden Township
North Lake	Harburn Township
North Pigeon Lake	Lutterworth Township
Oblong Lake	Harburn Township
Pencil Lake	Cavendish Township
Percy Lake	Harburn Township
Picard Lake	Cavendish Township
+Redstone Lake	Guilford Township
*Rustyshoe Lake	Glamorgan Township
Salmon Lake	Cavendish Township
Sheldon Lake	Lutterworth Township
Soyers Lake	Minden Township
+Stocking Lake	Havelock Township
Stormy Lake	Glamorgan Township
Twelve Mile Lake	Minden Township
Two Island Lake	Dudley Township
Wilbermere Lake	Monmouth Township

* Remnant population - now stocked with splake.
** Remnant population - no longer stocked with lake trout.
\+ Naturally self-sustaining population, currently not stocked.
All others stocked.

MINDEN DISTRICT BROOK TROUT LAKES

Band Lake	Havelock Township
Birchy Lake	Havelock Township
**Bivouac Lake	Eyre Township
**Blue Lake	Guilford Township
Boundary Lake	Harburn Township
Burdock Lake	Guilford Township
**Centre (Pivot) Lake	Guilford Township
*Depot Lake	Eyre Township
Dog Lake	Guilford Township
Duck Lake	Guilford Township
*Dutton Lake	Eyre Township
**East Lake	Harburn Township
Green Canoe Lake	Harburn Township
*Gregory's Pond	Harburn Township
Harburn Lake	Harburn Township
Hurst Lake	Dudley Township
Ike's Pond	Harburn Township
Little Birchy Lake	Guilford Township
Little Bob Lake	Glamorgan Township
Little Clear Lake	Cavendish Township
**Little East Lake	Hindon Township
Little Echo Lake	Monmouth Township
Little Harburn Lake	Harburn Township
Little Otter Lake	Anson Township
*Lost (Teacup) Lake	Eyre Township
**Lower (and Upper) Crane Lake	Hindon Township
Lowry (Bluerock) Lake	Monmouth Township
Morrow Lake	Harburn Township
*Nugget Lake	Eyre Township
One Island (L. Powderhorn)Lake	Havelock Township
Raden Lake	Eyre Township
*Round Lake	Cavendish Township
Scraggle Lake	Dudley Township
Spruce Lake	Eyre Township
+Stocking Lake	Havelock Township
*Tory (Dack's) Lake	Monmouth Township
*Wolf Lake	Havelock Township

* Remnant population, now stocked with splake.
** Splake planned for future.
\+ Naturally self-sustaining population, currently not stocked. All others stocked.

MINDEN DISTRICT BROOK TROUT RIVERS AND STREAMS*

Beaver Creek	Minden Township
+Black River	Hindon Township
Upper Burnt River	Snowdon Township
Crego Creek	Somerville Township
Upper Irondale River	Glamorgan Township
McCue Creek	Monmouth Township
West Redstone River	Guilford Township

* Small native brook trout populations do exist in some district streams . Stream surveys are required to accurately inventory these.

\+ Naturally self-sustaining fisheries, currently not stocked. All others stocked.

MINDEN DISTRICT RAINBOW TROUT LAKES

Beanpole Lake	Eyre Township
Blue Lake	Havelock Township
Bow Lake	Snowdon Township
Buckskin Lake	Monmouth Township
Clement Lake	Monmouth Township
Coburn Lake	Eyre Township
*Guilford (Miller's) Lake	Guilford Township
Kabakwa (Peach) Lake	Stanhope Township
Leaf Lake	Monmouth Township
**Little Esson (L. Otter) Lake	Monmouth Township
**Little Glamor (L. Bear) Lake	Monmouth Township
*Little Gull Lake	Lutterworth Township
Lochlin Lake	Glamorgan Township
Lost Lake	Monmouth Township
Lower Welch Lake	Stanhope Township
Minden Lake	Minden Township
Minnicock Lake	Glamorgan Township
Mountain (Little Lost) Lake	Monmouth Township
Sludge Lake	Lutterworth Township
Snap Lake	Havelock Township
Spar Lake	Lutterworth Township
*Wildcat Lake	Eyre Township
Wiley's Lake	Glamorgan Township

* Remnant population, now stocked with Splake.

** Splake planned for future.

NOTE: All rainbow fisheries maintained by stocking.

MINDEN DISTRICT RAINBOW TROUT RIVERS

Drag River	Dysart Township
Gull River	Laxton Township
Gull River	Minden/Lutterworth Townships

NOTE: All rainbow fisheries maintained by stocking.

MINDEN DISTRICT SPLAKE LAKES

Anson Lake	Hindon Township
Big East Lake	Hindon Township
*Bivouac Lake	Eyre Township
Black Lake	Lutterworth Township
*Blue Lake	Guilford Township
Buller (Clear) Lake	Lutterworth Township
*Centre (Pivot) Lake	Guilford Township
Coburn Lake	Eyre Township
Depot Lake	Havelock Township
Dutton Lake	Havelock Township
East Lake	Harburn Township
*Fishog Lake	Digby Township
Gooderham (Pine) Lake	Glamorgan Township
Gregory's Pond	Harburn Township
Guilford (Miller's) Lake	Guilford Township
Horseshoe (Elsie) Lake	Minden Township
*Little East Lake	Hindon Township
*Little Esson (L. Otter) Lake	Monmouth Township
*Little Glamor (L. Bear) Lake	Monmouth Township
Little Gull Lake	Lutterworth Township
Lost (Teacup) Lake	Eyre Township
*Lower Crane Lake	Hindon Township
Minden Lake	Minden Township
Nugget Lake	Eyre Township
Ross Lake	Harburn Township
Round Lake	Cavendish Tonwhsip
Rustyshoe Lake	Glamorgan Tonwship
*Silver Lake	Guilford Township
*South Jean Lake	Hindon Township
Tedious (Long) Lake	Guilford Township
Tory (Dack's) Lake	Monmouth Township
*Upper Crane Lake	Hindon Township
Wildcat Lake	Eyre Township
Wolf Lake	Havelock Township

* Splake planned for future.
NOTE: All splake lakes maintained by stocking.

MINDEN DISTRICT WALLEYE (YELLOW PICKEREL) LAKES

Billing's (Wolf) Lake	Glamorgan Township
Bluehawk Lake	Dysart Township
Canning Lake	Minden Township
Contau Lake	Glamorgan Township
Cranberry Lake	Dalton Township
Crystal Lake	Galway Township
Dalrymple Lake	Carden Township
Four Mile Lake	Somerville Township
Gooderham (Pine) Lake	Glamorgan Township
Grass Lake	Dysart Township
Head Lake	Dysart Township
*Head Lake	Laxton Township
Kashagawigamog Lake	Minden/Dysart Township
Loon (Dudman) Lake	Dudley Township
Maple Lake	Glamorgan Township
Paradise (Haas) Lake	Dysart Township
Salerno Lake	Glamorgan Township
*Shadow Lake	Somerville Township
Silver Lake	Somerville Township
Soyers Lake	Minden Township
Youngs Lake	Dalton Township
Burnt River	Somerville Township

* Head Lake, Laxton Township and Shadow Lake have recently been stocked with walleye. There is no resident walleye "population" as yet and until walleye establish themselves we encourage anglers to return any walleye caught in these lakes.
NOTE: Naturally self-sustaining populations not stocked, except to establish new fisheries.

MINDEN DISTRICT NORTHERN PIKE LAKES

Dalrymple Lake	Carden Township
Youngs Lake	Dalton Township

NOTE: Naturally self-sustaining populations, not stocked.

MINDEN DISTRICT BASS LAKES

Bass are present in several hundred District lakes. In addition, many more small lakes and ponds likely support, or have the ability to support bass.
NOTE: Naturally self-sustaining populations, not stocked except to establish new fisheries.

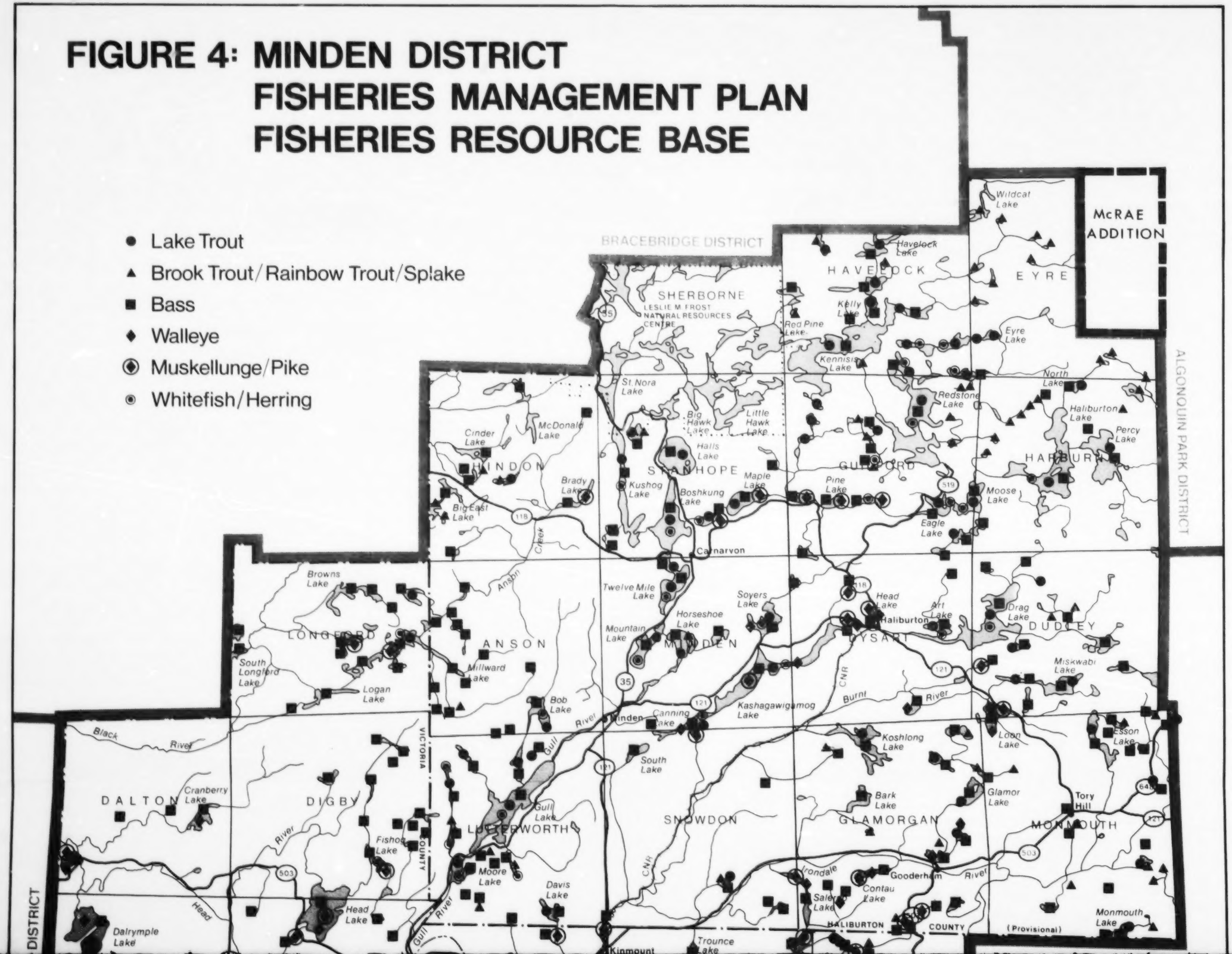
MINDEN DISTRICT MUSKELLUNGE LAKES

Bass Lake	Galway Township
Beech Lake	Stanhope Township
Big Trout Lake	Longford Township
Black lake	Dysart Township
Brady Lake	Hindon Township
Canning Lake	Minden Township
Contau Lake	Glamorgan Township
Cranberry lake	Guilford Township
Crego Lake	Somerville Township
Dalrymple Lake	Carden Township
Duck Lake	Laxton Township
Fishog Lake	Digby Township
Fortescue Lake	Cavendish Township
Four Mile Lake	Somerville Township
Galloway (Deer) Lake	Cavendish Township
Goose Lake	Somerville Township
Grass Lake	Dysart Township
Green Lake	Guilford Township
Greens Lake	Cavendish Township
Head Lake	Dysart Township
Head Lake	Laxton Township
Jimbeef Lake	Dysart Township
Kashagawigamog Lake	Minden/Dysart Townships
Loon (Dudman) Lake	Dudley Township
Maple Lake	Stanhope Township
Millward Lake	Anson Township
*Nogies Marsh	Harvey Township
North Longford Lake	Longford Township
Paradise (Haas) Lake	Dysart Township
Pine Lake	Guilford Township
Rush lake	Laxton Township
Rustyshoe Lake	Glamorgan Township
Salerno Lake	Glamorgan Township
Shadow Lake	Somerville Township
Silver Lake	Somerville Township
South Portage Lake	Dudley Township
St. Croix Lake	Galway Township
Stump Lake	Dudley Township
Thrasher Lake	Longford Township
White Lake	Galway Township
Youngs Lake	Dalton Township

* Nogies Marsh is a fish sanctuary.
NOTE: Naturally self-sustaining populations, not stocked except to establish new fisheries.

FIGURE 4: MINDEN DISTRICT
FISHERIES MANAGEMENT PLAN
FISHERIES RESOURCE BASE

- ● Lake Trout
- ▲ Brook Trout/Rainbow Trout/Splake
- ■ Bass
- ♦ Walleye
- ◈ Muskellunge/Pike
- ◉ Whitefish/Herring



LONGFORD
ANSON
MINDEN
OYSART
DUDLEY
DALTON
DIGBY
LUTTERWORTH
SNOWDON
GLAMORGAN
MONMOUTH
LAXTON
CARDEN
SOMERVILLE
GALWAY
CARNDISH
HALIBURTON COUNTY
(Provisional)
VICTORIA COUNTY
PETERBOROUGH COUNTY
HURONIA DISTRICT
MAPLE DISTRICT
BANCROFT DISTRICT
LINDSAY DISTRICT
HARVEY
CANADA ONTARIO RIDEAU TRENT SEVERN
STUDY AREA
Norland
Kinmount
Minden
Haliburton
Cobocon
Buckhor
Mountain Lake
South Longford Lake
Logan Lake
Millward Lake
Bob Lake
Canning Lake
Kashagawigamog Lake
Miskwabi Lake
Black River
Cranberry Lake
Gull River
South Lake
Koshlong Lake
Loon Lake
Esson Lake
Bark Lake
Glamor Lake
Tory Hill
Fishog Lake
Moore Lake
Davis Lake
Irondale
Gooderham
Contau Lake
Sale Lake
Monmouth Lake
Dalrymple Lake
Head Lake
Talbot Lake
Shadow Lake
Trounce Lake
Salmon Lake
Four Mile Lake
Crystal Lake
Canal Lake
Balsam Lake
Bass Lake
Catchacoma Lake
Squaw
Mississagua Lake
Mississagua River
Burnt River
CNR
503
121
35
507
649
6

M.N.R. Administrative District
County
Township
Community
Provincial Highways
Railways

Ministry of Natural Resources
Ontario

5 0 5 10 15 20 Kilometres
5 0 5 10 15 Miles

1: 250 000

FIGURE 5: MINDEN DISTRICT FISHERIES MANAGEMENT PLAN STRATEGIES AND TACTICS, 1986-1991

Strategy:
INVENTORY AND ASSESSMENT

Tactics:

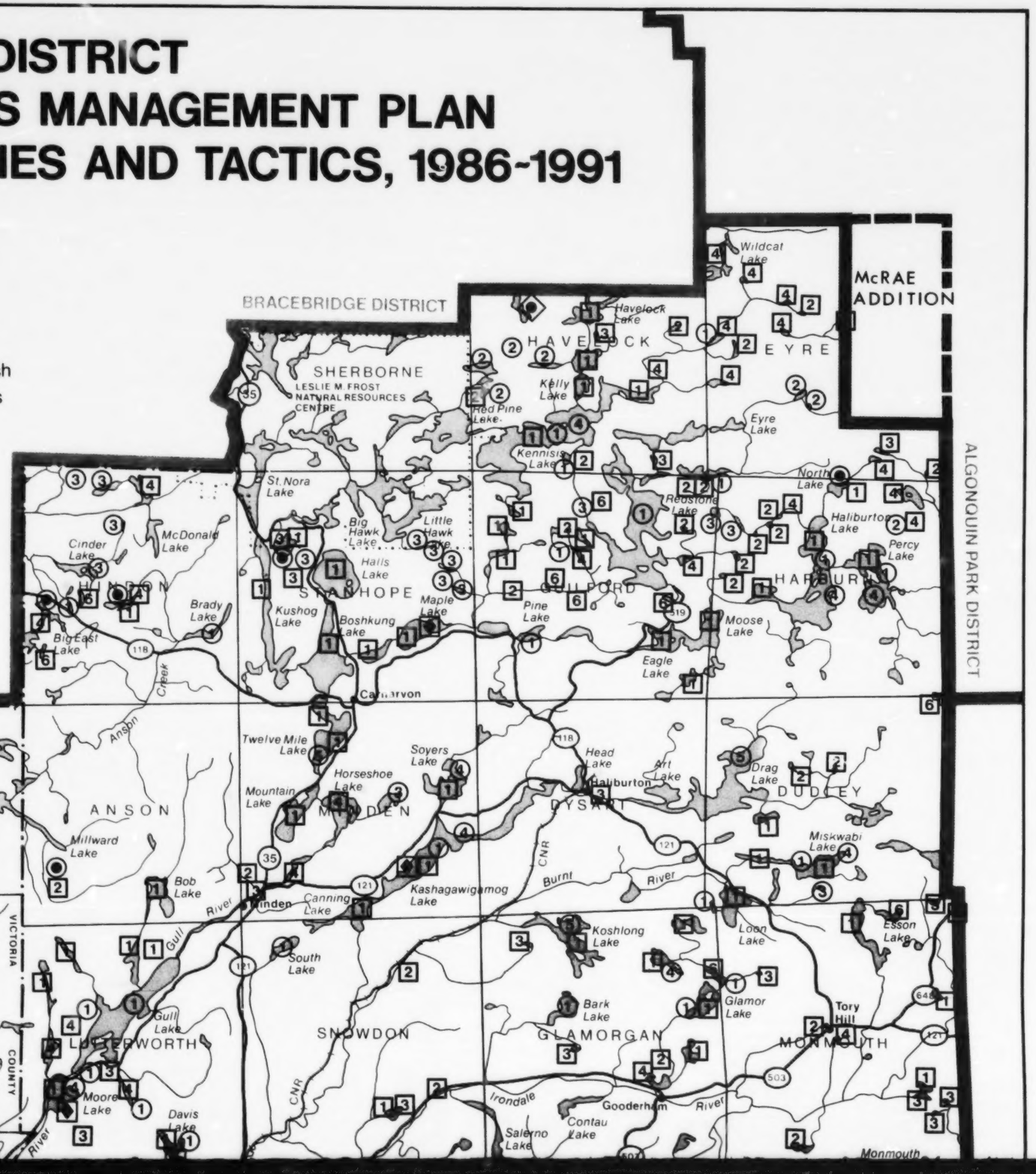
1. District Type Lakes
2. Lake Survey
3. Assess Suitability of Barren Waters for Game Fish
4. Identify and Evaluate Lake Trout Spawning Areas
5. Provincial Assessment Unit Type Lakes

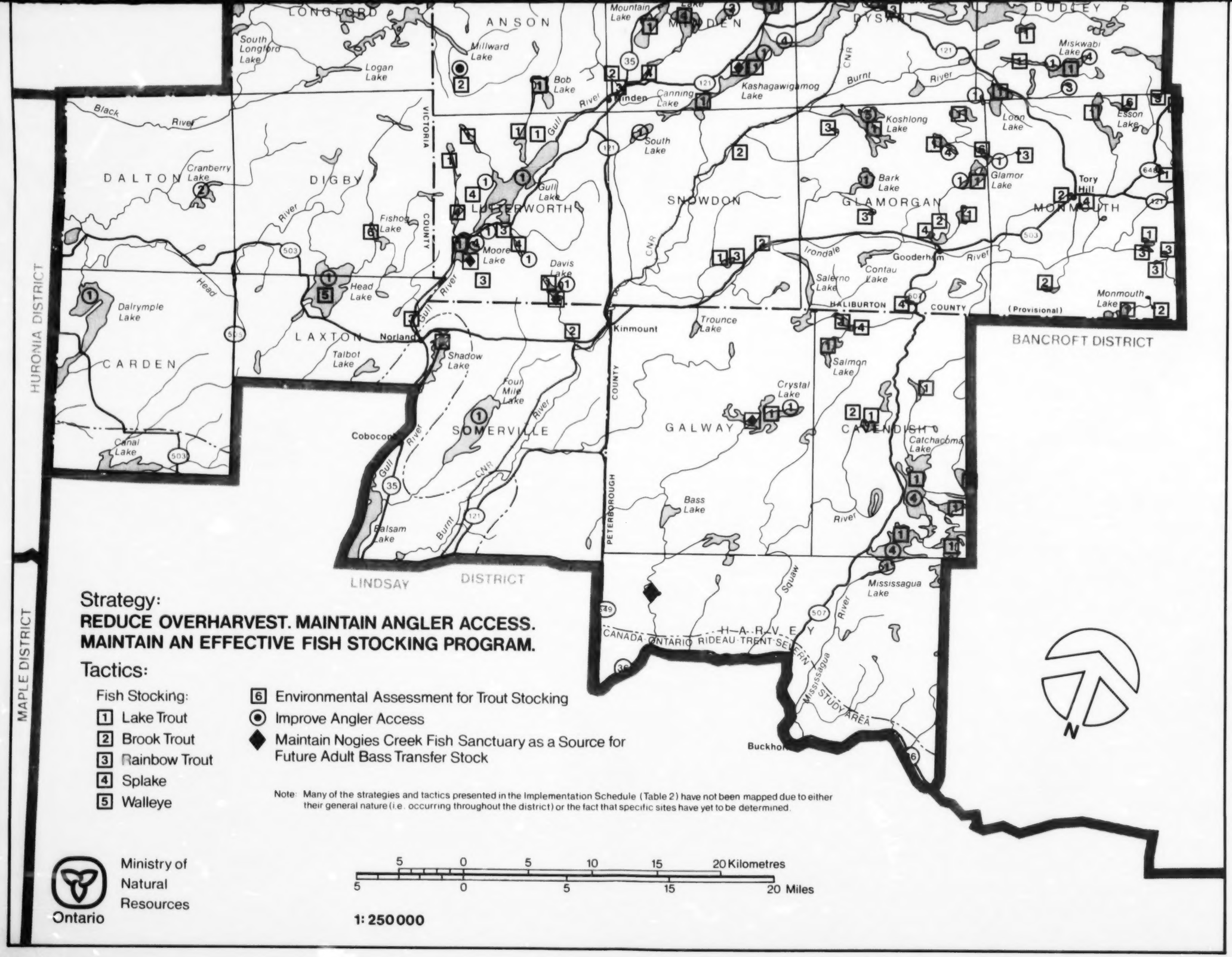
Strategy:
HABITAT PROTECTION

Tactics:

- Rehabilitate Degraded Fisheries Habitat
- Implement a NO Live Bait Fish Regulation

Continued below.





Strategy:

REDUCE OVERHARVEST. MAINTAIN ANGLER ACCESS. MAINTAIN AN EFFECTIVE FISH STOCKING PROGRAM.

Tactics:

Fish Stocking:

- [1] Lake Trout
- [2] Brook Trout
- [3] Rainbow Trout
- [4] Splake
- [5] Walleye

- [6] Environmental Assessment for Trout Stocking
- ◉ Improve Angler Access
- ◆ Maintain Nogies Creek Fish Sanctuary as a Source for Future Adult Bass Transfer Stock

Note: Many of the strategies and tactics presented in the Implementation Schedule (Table 2) have not been mapped due to either their general nature (i.e. occurring throughout the district) or the fact that specific sites have yet to be determined.

Ministry of Natural Resources

Ontario

5 0 5 10 15 20 Kilometres

5 0 5 15 20 Miles

1: 250 000